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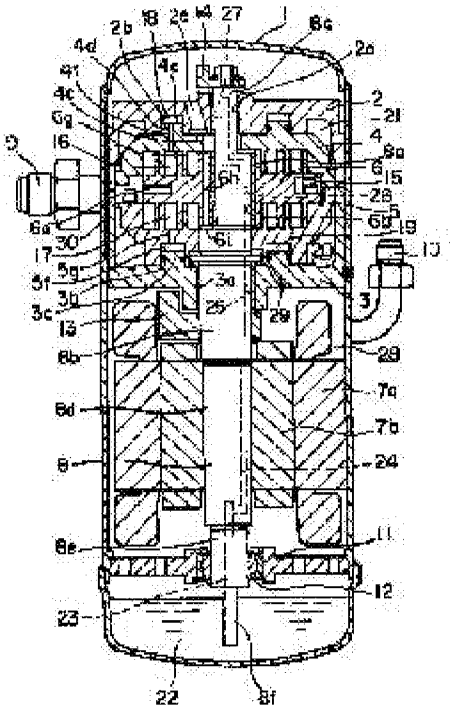
(54) SCROLL TYPE COMPRESSOR

(57)Abstract:

PURPOSE: To secure lubrication to each bearing part and slidably moving part by arranging an oil feed passage communicating with a lubricant sump, an oil feed passage eccentric to the axial center of the first oil feed passage, and a bearing oil feed hole oriented radially outward.

CONSTITUTION: Compressed fluid is sucked through a suction pipe 9 as a turning scroll 6 makes eccentric (turning) motion by means of rotational drive of a clamp shaft 8, and then compressed in each of compression chambers 16, 17 and thereafter, it is discharged outside of a tightly closed container 1 through a discharge pipe 10. Then, the oil in a lubricant oil sump 22 sucked in the second oil feed passage 24 through the first oil feed passage 23 by the action of a centrifugal pump is respectively supplied as lubricating oil supply to the second frame bearing 30 through the second frame bearing oil feed hole 25, to a turning bearing 6b through a turning bearing oil feed hole 26 and furthermore, to the first frame bearing 2a through the first frame bearing oil feed hole 27. Thereafter, the oil discharged in a discharge space 1a is returned to an electric motor storing chamber 28 through an oil returning passage 30 and returned to the lubricant oil sump 22 by means of its gravity force.



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2.**** shows the word which can not be translated.
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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]This invention relates to the scroll compressor used for the object for frozen air conditioning, the object for air compression, and others, especially a turning scroll comprises both gear teeth, and a driving shaft is related with the oil supply method of the scroll compressor which penetrates said turning scroll and a fixed scroll.
[0002]
[Description of the Prior Art]Conventionally, this kind of compressor is indicated, for example to JP,5-187372,A. That is, the turning scroll of 1 which formed a streak of involute lap in shaft-orientations both sides respectively, The structure where the principal axis for making the fixed scroll of the couple which has an involute lap of 1 which fits into the lap of this turning scroll, and said turning scroll revolve around the sun penetrates said turning scroll and said fixed scroll is indicated.
[0003]
[Problem(s) to be Solved by the Invention]However, since it is indicated about the scroll fluid machinery of the formula unsupplied with oil, the above-mentioned conventional technology is not indicated about the lubrication mechanism and means of this compressor.
[0004]A turning scroll comprises both gear teeth and the purpose of this invention has a driving shaft in providing the good scroll compressor of reliability about the oil supply method of the scroll compressor which penetrates said turning scroll and a fixed scroll.
[0005]
[Means for Solving the Problem]In order to attain the above-mentioned purpose, a scroll compressor concerning this invention, A turning scroll which formed a spiral lap in one monotonous both sides, and a fixed scroll oppose a lap mutually, In a scroll compressor which carries out eccentricity, combines, makes it circle, without a driving shaft established by penetrating said turning scroll and a fixed scroll rotating said turning scroll to a fixed scroll, and compresses a gas, It is constituting from a bearing feed hole where a lubricous sump's is in a high-pressure atmosphere, was open for free passage to the 1st oil supply passage that is open for free passage to this lubricous sump, the 2nd oil supply passage formed by being open for free passage to this 1st oil supply passage, and carrying out eccentricity to an axial center of said 1st oil supply passage, and this 2nd oil supply passage, and was formed in radial direction outward.
[0006]And a turning scroll which formed a spiral lap in one monotonous both sides, Oppose a lap mutually,

carry out eccentricity of the fixed scroll, and it is combined, In a scroll compressor which makes it circle, without a driving shaft established by penetrating said turning scroll and a fixed scroll rotating said turning scroll to a fixed scroll, and compresses a gas, It is having a bearing feed hole where a lubricous sump's is in a high-pressure atmosphere, was open for free passage to an oil supply passage which is open for free passage to this lubricous sump, and this oil supply passage, and was formed in radial direction outward, and composition which installs a compulsive pump means in said lubricous sump side edge part of said oil supply passage.

[0007]A turning scroll which formed a spiral lap in one monotonous both sides, A frame which opposes a lap mutually, carries out eccentricity of the fixed scroll, combines, and holds a fixed scroll so that sliding of driving shaft shaft orientations is possible, An operating chamber formed with a frame, a fixed scroll, and a seal ring, A communicating hole which opens for free passage compression space formed on a lap of an operating chamber, a turning scroll, and a fixed scroll is provided, In a scroll compressor which makes it circle, without a driving shaft established by penetrating said turning scroll and a fixed scroll rotating said turning scroll to a fixed scroll, and compresses a gas, It is constituting from a spiral slot where a lubricous sump was opened for free passage and formed in a bearing feed hole which is in a high-pressure atmosphere, was open for free passage to an oil supply passage which is open for free passage to this lubricous sump, and this oil supply passage, and was formed in radial direction outward, and this bearing feed hole.

[0008]A turning scroll which formed a spiral lap in one monotonous both sides, Oppose a lap mutually, carry out eccentricity of the fixed scroll, and it is combined, In a scroll compressor which makes it circle, without a driving shaft established by penetrating said turning scroll and a fixed scroll rotating said turning scroll to a fixed scroll, and compresses a gas, It is having composition which installed a bearing feed hole where a lubricous sump's is in a low-pressure atmosphere, was open for free passage to the 1st oil supply passage that is open for free passage to this lubricous sump, the 2nd oil supply passage formed by being open for free passage to this 1st oil supply passage, and carrying out eccentricity to an axial center of said 1st oil supply passage, and this 2nd oil supply passage, and was formed in radial direction outward.

[0009]And a turning scroll which formed a spiral lap in one monotonous both sides, Oppose a lap mutually, carry out eccentricity of the fixed scroll, and it is combined, In a scroll compressor which makes it circle, without a driving shaft established by penetrating said turning scroll and a fixed scroll rotating said turning scroll to a fixed scroll, and compresses a gas, It is having a bearing feed hole where a lubricous sump's is in a low-pressure atmosphere, was open for free passage to an oil supply passage which is open for free passage to this lubricous sump, and this oil supply passage, and was formed in radial direction outward, and composition which installed a compulsive pump means in said lubricous sump side edge part of said oil supply passage.

[0010]A turning scroll which formed a spiral lap in one monotonous both sides, Oppose a lap mutually, carry out eccentricity of the fixed scroll, and it is combined, In a scroll compressor which makes it circle, without a driving shaft established by penetrating said turning scroll and a fixed scroll rotating said turning scroll according to a rotation preventing mechanism to a fixed scroll, and compresses a gas, It is having composition which provided an oil supply hole which a lubricous sump's is in a low-pressure atmosphere, is open for free passage to an oil supply passage which is open for free passage to this lubricous sump, and this oil supply passage, and opens for free passage a bearing feed hole formed in radial direction outward,

this bearing feed hole, and said rotation preventing mechanism part.

[0011]

[Function]Even when a lubricous sump is in a high-pressure or low-pressure atmosphere according to this invention, The 2nd oil supply passage formed by carrying out eccentricity so that it might be open for free passage to the oil supply passage which is open for free passage to this lubricous sump is provided, By the composition and ****** which install the spiral slot which is open for free passage to the bearing feed hole formed in said lubricous sump side edge part of the composition which installs a radial-direction-outward bearing feed hole so that it may be open for free passage to this 2nd oil supply passage, or said oil supply passage at a compulsive pump means or said radial direction outward. The lubrication to each part of a bearing or a sliding part can be performed certainly.

[0012]When a lubricous sump is in a low-pressure atmosphere, the lubrication to each part of a bearing or a sliding part can be further performed certainly by constituting so that oil tempering of the sealing machine style may be provided and carried out between said turning scroll and said fixed scroll and a passage may be opened for free passage to said lubricous sump.

[0013]

[Example]Hereafter, some examples concerning this invention are described using figures.

[0014]Drawing 1 shows the entire structure of the scroll compressor of this example. Perspective views, drawing 3, and drawing 4 of drawing 2 of the Oldham splice 15 are the sectional views of the turning scroll 6 and the 2nd fixed scroll 5. The well-closed container 1 of the cylindrical shape which both ends were sealed, and the scroll compressor shown in drawing 1 made the axial center almost perpendicular, and has been arranged, The 1st frame two that coincided the axial center with the axial center of said well-closed container 1 in the upper part in this well-closed container 1, and was fixed to it, and 3 and the 2nd frame. The 1st fixed scroll 4 and the 2nd fixed scroll 5 which coincided this the 1st frame two and the 2nd frame, and 3 and the axial center which were fixed, turned the lap to a lower part and the upper part, respectively, and were fitted [three] in in said 1st frame two and the 2nd frame, respectively, The turning scroll 6 which made the lap counter and has been arranged so that the eccentric circular motion of an axial center is possible, and it may be pinched by this 1st fixed scroll 4 and the 2nd fixed scroll 5 at sandwich shape, The electric motor stator 7a and the motor rotor 7b for turning scroll 6 drive which coincided said 1st fixed scroll 4 and the 2nd fixed scroll 5, and an axial center, and have been arranged at said the 2nd frame lower part three, The crankshaft 8 which is fixed to this motor rotor 7b, and rotates said turning scroll 6 via the turning bearing 6b, and the suction pipe 9 which supplies compression gas to the space which penetrates the wall surface of said well-closed container 1, is arranged, and is formed on the lap of the 1st fixed scroll 4, and the lap of the turning scroll 6, It comprises the discharge tube 10 etc. which have been arranged by penetrating the wall surface of said well-closed container 1. Three is fixed to the wall surface of said well-closed container 1 in said 2nd frame, and two is fixed [frame / said / 1st / three] in said 2nd frame.

[0015]8 d of portions by which the crankshaft 8 which is a driving shaft was fixed to the motor rotor 7b, The lower supporting spindle 8b supported by the 2nd frame bearing 3a which was extended to the upper part from 8d of portions fixed to said motor rotor 7b, and was fixed to said the 2nd frame center three, The eccentric shaft 8a which was extended above this lower supporting spindle 8b, and was supported by said turning bearing 6b, The upper supporting spindle 8c supported by the 1st frame bearing 2a which was extended from this eccentric shaft 8a to the upper part, and was fixed to said the 1st frame center two, The

lower end supporting spindle 8e supported by the guide bearing 12 formed in the auxiliary frame 11 which was caudad extended from 8d of portions fixed to said motor rotor 7b, and was fixed to the wall surface of said well-closed container 1, and the feeding pipe 8f which carries out an opening to the pars basilaris ossis occipitalis of said well-closed container 1 are comprised. In order to negate the moment by the centrifugal force and centrifugal force of the turning scroll 6 in the crankshaft 8 and to prevent generating of vibration to it, the lower balance weight 13 is attached to the lower supporting spindle 8b, and the upper balance weight 14 is attached to the upper supporting spindle 8c, respectively. Said 2nd frame bearing 3a has bearing structure with spittle, and will take charge of prudence of the crankshaft 8 and the motor rotor 7b. It is restrained, and the turning scroll 6 is rotated and performs eccentric (revolution) movement so that it may not rotate by the revolving preventing means 15, for example, the Oldham splice, (rotation around the eccentric shaft 8a). As shown in drawing 2, said Oldham splice 15 is formed in ring shape or ellipse shape, and comprises the two ring parts 15a and 15b and the six key parts 15c, 15d, 15e, 15f, 15g, and 15h. That is, the Oldham splice 15 has 2 block construction from the center of the key parts 15c and 15h and key parts [15e and 15f] key width. The key parts 15c and 15h and the key parts 15e and 15f of said Oldham splice 15 slide on the inside of the key groove 5b formed in said 2nd fixed scroll 5 shown in the key grooves 6c and 6d and drawing 4 which were formed in said turning scroll 6 shown in drawing 3, and 5c, respectively. The ring parts 15a and 15b of said Oldham splice 15 slide on the inside of the crevice 6e formed in the axial center of said turning scroll 6, respectively.

[0016]Drawing 3 and drawing 4 are the sectional views of the turning scroll 6 and the 2nd fixed scroll 5. The cut-water part of the turning scroll lap 6a of said turning scroll 6 is formed with the circle, and the trailer of the outside curve of this lap 6a approaches with the periphery of the panel 6f, or it is in agreement. 6g (6i) of discharge passages and 6 h of vent holes are installed in the peripheral part of the turning bearing 6b. These 6 g of discharge passages are formed in the axial both ends (drawing 1 upper-and-lower-ends side) of the turning scroll 6, and are open for free passage by said 6 h of vent holes. Both the cut waters and end parts of a volume of the fixing scroll lap 5a of said 2nd fixed scroll 5 are formed with a circle, and 5 d of fitting holes are provided near the cut-water part of the fixing scroll lap 5a. On the other hand, the fixing scroll lap 5a winds and the suction passage 5e is formed near the end part.

[0017]Drawing 5 is a sectional view of the 1st fixed scroll 4. The fixing scroll lap 4a of said 1st fixed scroll winds, and the opening of the admission port 4b which opens the wall surface of said well-closed container 1 for free passage to the suction pipe 9 arranged by penetrating is carried out near the end part. The vent hole 4c is formed so that an opening may be carried out to said 6 g of discharge passages formed in the axial both ends (drawing 1 upper bed side) of said turning scroll 6 near the cut-water part of the fixing scroll lap 4a on the other hand. The discharge passage 2c is formed [two] in said 1st frame so that an opening may be carried out to this vent hole 4c, and it is open for free passage to the discharge space 1a of the upper part of said well-closed container 1.

[0018]The division inserted into the lap 6a of the turning scroll 6, the lap 4a of the 1st fixed scroll 4, and the lap 5a of the 2nd fixed scroll 5 forms the compression space 16 and 17, this compression space 16 is open for free passage to said 6 g of discharge passages, and this compression space 17 is open for free passage to said discharge passage 6i.

[0019]The ring shape heights 4e with the seal ring 4d are formed in said 1st frame 2 side-edge part of said 1st fixed scroll 4.

These ring shape heights 4e fit in said ring shaped recessed part 2b formed [two] in the 1st frame via said seal ring 4d, and the operating chamber 18 is formed.
On the other hand, the ring shaped recessed part 5f is installed in said 2nd frame 3 side-edge part of said 2nd fixed scroll 5.
The ring shape heights 3c which were formed [three] in the 2nd frame and were provided with the seal ring 3b are fitted in said ring shaped recessed part 5f via the seal ring 3b, and the operating chamber 19 is formed.
Said operating chambers 18 and 19 are connected with said compression space 16 and 17 by the communicating holes 4f and 5g by which the ** hole was carried out to the 1st fixed scroll 4 and the 2nd fixed scroll 5. If the pressure in the operating chamber 18 and 19 is except a discharge pressure, it can be set up arbitrarily here. That is, by having composition which serves as intermediate pressure or suction pressure, and releases the 1st fixed scroll or the 2nd fixed scroll to shaft orientations to a turning scroll, A compressor can be operated holding the gap at the lap tip of a turning scroll, and the tip of a lap of a fixed scroll in an always proper gap, And when phenomena, such as liquid compression and an abnormal rise of compression space internal pressure, arise, for example, the unusual load in the sliding contact surface of the end face outside a boundary board of a turning scroll and the end face outside a boundary board of a fixed scroll can be avoided by releasing a fixed scroll from a turning scroll.
[0020]In the compressor of the above-mentioned composition, when the turning scroll 6 carries out eccentric (revolution) movement by rotation of the crankshaft 8, Compression fluid is inhaled from the suction pipe 9, and it is compressed by the compression space 16 and 17, After reaching a predetermined pressure (discharge pressure) and being breathed out by the discharge space 1a of the upper part of said well-closed container 1 from the discharge passages 6g and 6i, 6 h of vent holes, the vent hole 4c, and the discharge passage 2c, it is breathed out out of the well-closed container 1 through the discharge tube 10.
[0021]Below, the lubrication structure of this example is explained.
[0022]The 1st oil supply passage 23 that is open for free passage to the lubricous sump 22 under a high-pressure (abbreviated discharge pressure) atmosphere stored by the pars basilaris ossis occipitalis of said well-closed container 1 is formed in said feeding pipe 8f provided in the lower end part of said crankshaft 8. It was open for free passage to this 1st oil supply passage 23, and the 2nd oil supply passage 24 formed by carrying out eccentricity to the axial center of the 1st oil supply passage 23, i.e., a crankshaft, has extended to the upper supporting spindle which is an upper bed part of the crankshaft 8.
The bearing feed hole formed in radial direction outward so that it might be open for free passage to each bearing is installed in said 2nd oil supply passage 24. That is, the 1st frame bearing feed hole 27 is installed in the fixed pivot receipt oil gallery 26 and the 1st frame bearing 2a by the 2nd frame bearing feed hole 25 and the turning bearing 6b at the 2nd frame bearing 3a, respectively. In the 2nd oil supply passage 24, sufficient passage area is secured so that pressure drawdown may not occur. The 1st oil supply passage 23 and the 2nd oil supply passage 24 are open for free passage by the radial direction hole which drilled the shaft-orientations hole in the axial center and eccentric position of the crankshaft, respectively, and drilled the former upper bed part and the latter lower end part in the crankshaft, and are formed by closing with the heel sealing plug of this hole. Other oil supply passages are formed similarly.
[0023]The oil of the lubricous sump 22 inhaled through the 1st oil supply passage 23 by centrifugal pump operation in the 2nd oil supply passage 24, Lubricous oil supply is carried out [in the 2nd frame bearing 3a /

at the turning bearing 6b] through the 1st more frame bearing feed hole 27 to the 1st frame bearing 2a through the fixed pivot receipt oil gallery 26 through the 2nd frame bearing feed hole 25, respectively. Here, among the oils which carried out the lubrication of the 2nd frame bearing 3a, a part goes caudad, and passes through a bearing crevice electric motor storing chamber 28, and other oils flow through a bearing crevice into said electric motor storing chamber 28 via the oil return hole 29 formed [three] in the 2nd fixed scroll 5 and the 2nd frame toward the upper part. Among the oils which carried out the lubrication of the turning bearing 6b, a part goes caudad, and flows through a bearing crevice, and other oils are discharged [at said electric motor storing chamber 28] toward the upper part to said 6 g of discharge passages again via said oil return hole 29, respectively in a bearing crevice. Among the oils which carried out the lubrication of the 1st fixed frame shaft carrier 2a, a part goes caudad, and 6g of discharge passages pass through a bearing crevice, and other oils are discharged by the discharge space 1a toward the upper part, respectively in a bearing crevice. The oil discharged by said discharge space 1a, respectively, It **** to the electric motor storing chamber 28 through the oil return path 30 through which the compression fluid provided in the peripheral part of the 1st frame and the 2nd frame flows, and returns to the lubricous sump 22 with gravity with said oil which carried out oil tempering and was scavenged via the hole 29 to the electric motor storing chamber 28.

[0024]Below, other examples of this invention are described. Drawing 6 shows the entire structure of the scroll compressor in which other examples of this invention are shown. Here, since the same number was appended to the same part as compared with the example shown in drawing 1, explanation of the structure of the portion is omitted. The feature of this example is having installed the compulsive pump means in the lower end part of said crankshaft 8 as compared with the example shown in Drawing 1. That is, it is what installed a trochoid pump, a gear pump, etc. in the lower end supporting spindle 8e end of the crankshaft 8 as a compulsive pump means, The inner rotor 32 which the pumping axes 31 were formed in said lower end supporting spindle 8e end, and was directly linked with these pumping axes 31, The outer rotor 33 geared and driven to this inner rotor 32, The upper side plate 35 and the lower side plate 36 are consisted of by the up-and-down side of the casing 34 which accommodates this outer rotor 33, and this casing 34, respectively, and it is being fixed to said auxiliary frame 11. The delivery 38 is established in said lower side plate 36 so that it may be open for free passage with the admission port 37 which carries out an opening to the oil of said lubricous sump 22, and the entrance of the oil supply passage 23 lower-end part formed in the center section of the crankshaft 8. This oil supply passage 23 has extended to the upper supporting spindle which is an upper bed part of the crankshaft 8, and the 2nd frame bearing feed hole 25, the fixed pivot receipt oil gallery 26, and the 1st frame bearing feed hole 27 which were formed in radial direction outward so that it might be open for free passage to each bearing are installed.

[0025]When the pumping axes 31 drive with rotation of the crankshaft 8, in such composition by engagement of the inner rotor 32 and the outer rotor 33. The oil of the lubricous sump 22 is attracted from the admission port 37, pressure oil is sent out to the delivery 38, and lubricous oil supply is carried out from each bearing feed hole through the oil supply passage 23 at each bearing. The course which carries out the lubrication of each bearing and returns to the lubricous sump 22 is the same as the above-mentioned example.

[0026]Below, other examples of this invention are described. Drawing 7 shows the entire structure of the scroll compressor in which other examples of this invention are shown. Here, since the same number was

appended to the same part as compared with the example shown in drawing 1, explanation of the structure of the portion is omitted. The oil supply passage 23 is formed in the center section of said crankshaft 8, and said feeding pipe 8f of the crankshaft 8 lower-end part is carrying out the opening to the lubricous sump 22 under a high-pressure atmosphere stored by the pars basilaris ossis occipitalis of said well-closed container 1. This oil supply passage 23 has extended to the upper supporting spindle which is an upper bed part of the crankshaft 8, and the 2nd frame bearing feed hole 25, the fixed pivot receipt oil gallery 26, and the 1st frame bearing feed hole 27 which were formed in radial direction outward so that it might be open for free passage to each bearing are installed, respectively. The spiral slots 39, 40, and 41 are formed in the peripheral part of an axis, respectively so that it may be open for free passage to this 2nd frame bearing feed hole 25, the fixed pivot receipt oil gallery 26, and the 1st frame bearing feed hole 27. Said 1st frame bearing feed hole 27 and said operating chamber 18 are open for free passage via the restriction passage 42 which permits few leakage.

[0027]By having composition described above, by the differential pressure of a discharge pressure and said operating chamber 18 pressure, the oil of the lubricous sump 22 can be lifted to the 1st frame bearing feed hole 27 in the highest position, and an oil can be filled also to the 2nd frame bearing feed hole 25 or the fixed pivot receipt oil gallery 26. After that, by viscosity-pump operation of the spiral slots 39, 40, and 41, the lubrication of each bearing part is carried out, and the lubricous sump 22 **** again.

[0028]Although the example described above was a case where the atmosphere of the lubricous sump 22 was under high voltage, the following examples describe the case under low pressure.

[0029]Since drawing 8 appended the same number to the same part as compared with the example which is what showed the entire structure of the scroll compressor in which other examples of this invention are shown, and was shown in drawing 1, explanation of the structure of the portion is omitted.

[0030]The seal means 43 and 44 which comprise a seal ring and a ring groove are formed between the turning scrolls 4, and the seal of the discharge pressure is carried out to the 1st fixed scroll 4 and the 2nd fixed scroll 5. Direct continuation of the discharge tube 10 is carried out to the 1st frame discharge passage two 2a, and airtightness is held although not illustrated. A wall surface is penetrated in the well-closed container 1 center section, the suction pipe 9 is arranged, the suction hole 45 is established in the 2nd frame three, and it leads to the admission ports 46 and 47 formed in the 1st fixed scroll 4 and the 2nd fixed scroll 5. Therefore, when the turning scroll 6 circles by rotation of the crankshaft 8, Compression fluid is inhaled from the suction pipe 9, flows into the suction hole 45 and the admission ports 46 and 47, is compressed by the compression space 16 and 17, and after it reaches a predetermined pressure (discharge pressure), it is breathed out out of the well-closed container 1 through the discharge tube 10 from the discharge passages 6g and 6i, 6 h of vent holes, the vent hole 4c, and the discharge passage 2c. As stated above, pressure atmosphere in the well-closed container 1 can be made into low pressure (suction pressure) by establishing the seal means 43 and 44 between a fixed scroll and a turning scroll, and having composition which carried out direct continuation of the discharge tube to the discharge passage 2c.

[0031]Below, the lubrication structure of this example is explained.

[0032]The 1st oil supply passage 23 that is open for free passage to the lubricous sump 22 under a high-pressure atmosphere stored by the pars basilaris ossis occipitalis of said well-closed container 1 is formed in said feeding pipe 8f provided in the lower end part of said crankshaft 8.

It was open for free passage to this 1st oil supply passage 23, and the 2nd oil supply passage 24 formed by

carrying out eccentricity to the axial center of the 1st oil supply passage 23 has extended to the upper supporting spindle 8c which is an upper bed part of the crankshaft 8.
The bearing feed hole formed in radial direction outward so that it might be open for free passage to each bearing is installed in said 2nd oil supply passage 24. That is, the 1st frame bearing feed hole 27 is installed in the fixed pivot receipt oil gallery 26 and the 1st frame bearing 2a by the 2nd frame bearing feed hole 25 and the turning bearing 6b at the 2nd frame bearing 3a, respectively. In the 2nd oil supply passage 24, sufficient passage area is secured so that pressure drawdown may not occur.
[0033]The oil of the lubricous sump 22 inhaled through the 1st oil supply passage 23 by centrifugal pump operation in the 2nd oil supply passage 24, Lubricous oil supply is carried out [in the 2nd frame bearing 3a / at the turning bearing 6b] through the 1st more frame bearing feed hole 27 to the 1st frame bearing 2a through the fixed pivot receipt oil gallery 26 through the 2nd frame bearing feed hole 25, respectively. Here, among the oils which carried out the lubrication of the 2nd frame bearing 3a, a part goes caudad, and passes through a bearing crevice electric motor storing chamber 28, and other oils flow through a bearing crevice into said electric motor storing chamber 28 via the oil return hole 29 formed [three] in the 2nd fixed scroll 5 and the 2nd frame toward the upper part. Among the oils which carried out the lubrication of the turning bearing 6b, a part goes caudad, and flows through a bearing crevice, and other oils are discharged [at said electric motor storing chamber 28] toward the upper part to said 6 g of discharge passages again via said oil return hole 29, respectively in a bearing crevice. Among the oils which carried out the lubrication of the 1st frame bearing 2a, a part goes caudad, and 6g of discharge passages pass through a bearing crevice, and other oils are discharged by the discharge space 1a toward the upper part, respectively in a bearing crevice. The oil discharged by said discharge space 1a, respectively is ****(ed) to the electric motor storing chamber 28 through the oil return path 30 established in the peripheral part of the 1st frame and the 2nd frame, and returns to the lubricous sump 22 with gravity with said oil which carried out oil tempering and was scavenged via the hole 29 to the electric motor storing chamber 28.
[0034]Below, other examples of this invention are described. Drawing 9 shows the entire structure of the scroll compressor in which other examples of this invention are shown. Here, since the same number was appended to the same part as compared with the example shown in drawing 6 and drawing 8, explanation of the structure of the portion is omitted.
[0035]since lubrication structure is indicated like drawing 6 as compared with the example which showed drawing 6 and drawing 8 the feature of this example about the case (drawing 8 -- the same) where the atmosphere of the lubricous sump 22 is under low pressure, the explanation about structure and an operation is omitted.
[0036]Below, other examples of this invention are described. Drawing 10 shows the entire structure of the scroll compressor in which other examples of this invention are shown. Here, since the same number was appended to the same part as compared with the example shown in drawing 8, explanation of the structure of the portion is omitted.
[0037]The turning bearing 6a is divided into two in shaft orientations, and while carrying out the opening of the one end to this parting plane, the oil path 48 which carries out the opening of the other end to the crevice 6e formed in the axial center of said turning scroll 6 which has stored Oldham ring 15 is established. The trochoid pump is installed in the lower end part of the crankshaft 8 as a compulsive pump means, While the bearing feed holes 25, 26, and 27 formed in radial direction outward are installed so that it may be open for

free passage with the delivery 38 of this trochoid pump, and the oil supply passage 23 may extend to the upper supporting spindle which is an upper bed part of the crankshaft 8 and may be open for free passage to each bearing, The feed hole 49 formed in radial direction outward so that it might be open for free passage to said oil path 48 is installed.

[0038]The lubricating oil inhaled and lifted by the trochoid pump in the oil supply passage 23 by having the above composition, Each bearing via each bearing feed holes 25, 26, and 27 lubrication, then the lubricating oil which both flowed into the above-mentioned feed hole 49, It is supplied with oil by the crevice 6e formed in the axial center of said turning scroll 6 which has stored Oldham ring 15 through the oil path 48, the lubrication of Oldham ring 15 is performed, and it returns to an inlet side.

[0039]Drawing 11 shows the entire structure of the scroll compressor in which other examples of this invention are shown.

[0040]O ring 50 is installed in the 1st frame, and 2 and the well-closed container 1 by the 1st fixed scroll 4 and the 2nd fixed scroll 5 again, and the seal means 43 and 44 which comprise a seal ring and a ring groove between the turning scrolls 4 carry out the seal of the discharge pressure to them, and form the discharge space 52 in them. Although the discharge space 52 and the section wall 51 to isolate are formed in the 1st frame two and the upper supporting spindle 8c end of the KURANKUJI axis 8 is not illustrated to it, the airtightness in this section wall 51 is held. The discharge tube 10 is connected to this section wall 51 secret closed container 1 upper part. A wall surface is penetrated in well-closed container 1 center section, the suction pipe 9 is arranged, the suction hole 45 is established in the 2nd frame three, and it leads to the admission ports 46 and 47 formed in the 1st fixed scroll 4 and the 2nd fixed scroll 5. The section wall room 53 and the low-tension side which are formed by said section wall 51 are connected with the 1st frame two by the communicating path 54.

[0041]Therefore, when the turning scroll 6 circles by rotation of the crankshaft 8, Compression fluid is inhaled from the suction pipe 9, and it flows into the suction hole 45 and the admission ports 46 and 47, It is compressed by the compression space 16 and 17, after reaching a predetermined pressure (discharge pressure), it is breathed out by the discharge space 53 from the discharge passages 6g and 6i, 6 h of vent holes, the vent hole 4c, and the discharge passage 2c, and it is breathed out out of the well-closed container 1 through the discharge tube 10. As stated above, the seal means 43 and 44 are established between a fixed scroll and a turning scroll, Pressure atmosphere of the lubricous sump 22 can be made into low pressure by installing O ring 50 in the 1st frame, and 2 and the well-closed container 1, and having composition which formed further the section wall 51 which isolates the upper supporting spindle 8c end of the KURANKUJI axis 8 with the discharge space 53.

[0042]Since it is next the same as that of the example shown in drawing 8 about the lubrication structure of this example, explanation here is omitted.

[0043]The oil of the lubricous sump 22 inhaled through the 1st oil supply passage 23 by centrifugal pump operation in the 2nd oil supply passage 24, Lubricous oil supply is carried out [in the 2nd frame bearing 3a / at the turning bearing 6b] through the 1st more frame bearing feed hole 27 to the 1st frame bearing 2a through the fixed pivot receipt oil gallery 26 through the 2nd frame bearing feed hole 25, respectively. Here, among the oils which carried out the lubrication of the 2nd frame bearing 3a, a part goes caudad, and passes through a bearing crevice electric motor storing chamber 28, and other oils flow through a bearing crevice into said electric motor storing chamber 28 via the oil return hole 29 formed [three] in the 2nd fixed

scroll 5 and the 2nd frame toward the upper part. The turning bearing 6b among the oils which carried out lubrication a part, Go caudad, flow through a bearing crevice and via said oil return hole 29 to said electric motor storing chamber 28. Toward the upper part, other oils are ****(ed) to the electric motor storing chamber 28 via the section wall room 54, the communicating path 54, and the suction hole 45 with the oil which carried out the lubrication of the 1st frame bearing 2a, and return a bearing crevice to the lubricous sump 22 with gravity with said oil which carried out oil tempering and was scavenged via the hole 29 to the electric motor storing chamber 28.

[0044]Below, drawing 12 and drawing 13 show the entire structure of the scroll compressor in which other examples of this invention are shown. Here, since the same number was appended to the same part as compared with the example shown in drawing 9 and drawing 10, explanation of the structure of the portion is omitted.

[0045]The feature of this example has the structure where drawing 13 and drawing 10 have same drawing 12 and drawing 9 respectively again, about lubrication structure.

It is that the composition which carries out atmosphere of the lubricous sump 22 under low pressure differs. Since it is the same as that of drawing 11 which mentioned the atmosphere of the lubricous sump 22 above about the composition carried out under low pressure, the explanation about a structure here and an operation is omitted.

[0046]Drawing 14 shows the entire structure of the scroll compressor in which other examples of this invention are shown.

[0047]The upper bed part of the crankshaft 8 remains in the turning bearing 6b, and shows the case where there is no upper supporting spindle 8c compared with the above-mentioned example. The oil sump room 55 is formed in said eccentric shaft 8a upper bed part side of the 1st fixed scroll 4, and this oil sump room 55 and the low-tension side are connected by the communicating path 56.

[0048]O ring 50 is installed in the 1st frame, and 2 and the well-closed container 1 by the 1st fixed scroll 4 and the 2nd fixed scroll 5 again, and the seal means 43 and 44 which comprise a seal ring and a ring groove between the turning scrolls 4 carry out the seal of the discharge pressure to them, and form the discharge space 52 in them. The discharge tube 10 is connected to the 1st frame 2 upper parts, a wall surface is penetrated in well-closed container 1 center section, the suction pipe 9 is arranged, the suction hole 45 is established in the 2nd frame three, and it leads to the admission ports 46 and 47 formed in the 1st fixed scroll 4 and the 2nd fixed scroll 5.

[0049]Therefore, when the turning scroll 6 circles by rotation of the crankshaft 8, Compression fluid is inhaled from the suction pipe 9, and it flows into the suction hole 45 and the admission ports 46 and 47, It is compressed by the compression space 16 and 17, after reaching a predetermined pressure (discharge pressure), it is breathed out by the discharge space 53 from the discharge passages 6g and 6i, 6 h of vent holes, the vent hole 4c, and the discharge passage 2c, and it is breathed out out of the well-closed container 1 through the discharge tube 10. As stated above, the seal means 43 and 44 are established between a fixed scroll and a turning scroll, Pressure atmosphere of the lubricous sump 22 can be made into low pressure by installing O ring 50 in the 1st frame, and 2 and the well-closed container 1, and having composition which removed the upper supporting spindle 8c of the crankshaft 8 further.

[0050]Since it is the same except that there is next no 1st frame bearing feed hole 27 about the lubrication structure of this example compared with the example shown in drawing 6, explanation here is omitted. By

having the above composition, the lubricating oil inhaled and lifted by the trochoid pump in the oil supply passage 23 carries out the lubrication of the 2nd frame bearing 3a and the turning bearing 6b via the 2nd frame bearing feed hole 25 and the fixed pivot receipt oil gallery 26. Here, among the oils which carried out the lubrication of the 2nd frame bearing 3a, a part goes caudad, and passes through a bearing crevice electric motor storing chamber 28, and other oils flow through a bearing crevice into said electric motor storing chamber 28 via the oil return hole 29 formed [three] in the 2nd fixed scroll 5 and the 2nd frame toward the upper part. The turning bearing 6b among the oils which carried out lubrication a part, Go caudad, flow through a bearing crevice and via said oil return hole 29 to said electric motor storing chamber 28. Other oils flow through a bearing crevice up, once they are stored at the oil sump room 55, they are **** (ed) via the communicating path 56 and the suction hole 45 to the electric motor storing chamber 28, and they return to the lubricous sump 22 with gravity with said oil which carried out oil tempering and was scavenged via the hole 29 to the electric motor storing chamber 28.

[0051]Below, other examples of this invention are described. Drawing 15 shows the entire structure of the scroll compressor in which other examples of this invention are shown. Here, since the same number was appended to the same part as compared with the example shown in drawing 1, explanation of the structure of the portion is omitted.

[0052]The feature of this invention is that the axial direction of said crankshaft 8 is horizontally arranged as compared with the example shown in drawing 1. That is, the scroll compressor of type is indicated every width. The well-closed container 1 of the cylindrical shape which both ends were sealed, and the scroll compressor shown in drawing 15 leveled the axial center mostly, and has been arranged, The 1st frame two that coincided the axial center with the axial center of said well-closed container 1 in the left part in this well-closed container 1, and was fixed to it, and 3 and the 2nd frame. The 1st fixed scroll 4 and the 2nd fixed scroll 5 which coincided this the 1st frame two and the 2nd frame, and 3 and the axial center which were fixed, turned the lap to the method of the right, and the left, respectively, and were fitted [three] in in said 1st frame two and the 2nd frame, respectively, The turning scroll 6 which made the lap counter and has been arranged so that the eccentric circular motion of an axial center is possible, and it may be pinched by this 1st fixed scroll 4 and the 2nd fixed scroll 5 at sandwich shape, The electric motor stator 7a and the motor rotor 7b for turning scroll 6 drive which coincided said 1st fixed scroll 4 and the 2nd fixed scroll 5, and an axial center, and have been arranged at said the 2nd frame lower part three, The crankshaft 8 which is fixed to this motor rotor 7b, and rotates said turning scroll 6 via the turning bearing 6b, and the suction pipe 9 which supplies compression gas to the space which penetrates the wall surface of said well-closed container 1, is arranged, and is formed on the lap of the 1st fixed scroll 4, and the lap of the turning scroll 6, It comprises the discharge tube 10 etc. which have been arranged by penetrating the wall surface of said well-closed container 1. Three is fixed to the wall surface of said well-closed container 1 in said 2nd frame, and two is fixed [frame / said / 1st / three] in said 2nd frame.

[0053]8 d of portions by which the crankshaft 8 which is a driving shaft was fixed to the motor rotor 7b, The main support shaft 8b supported by the 2nd frame bearing 3a which was extended to the left from 8d of portions fixed to said motor rotor 7b, and was fixed to said the 2nd frame center three, The eccentric shaft 8a which was extended to the left of this main support shaft 8b, and was supported by said turning bearing 6b, The 1st supporting spindle 8c supported by the 1st frame bearing 2a which was extended from this eccentric shaft 8a to the left, and was fixed to said the 1st frame center two, The 2nd supporting spindle 8e

supported by the guide bearing 12 and the guide bearing housing 57 which were formed in the auxiliary frame 11 which was extended to the right direction from 8d of portions fixed to said motor rotor 7b, and was fixed to the wall surface of said well-closed container 1, The 1st feeding pipe 58 that spread as the entrance went for this 2nd supporting spindle 8e right end end to left-hand side small is comprised. The 2nd feeding pipe 59 that carries out an opening to the lubricous sump 22 formed in said auxiliary frame 11 and the side edge part of said well-closed container 1 is installed in said guide bearing housing 57. In order to negate the moment by the centrifugal force and centrifugal force of the turning scroll 6 in the crankshaft 8 and to prevent generating of vibration to it, the 1st balance weight 13 is attached to the main support shaft 8b, and the 2nd balance weight 14 is attached to the 1st supporting spindle 8c, respectively.

[0054]In the compressor of the above-mentioned composition, when the turning scroll 6 carries out eccentric (revolution) movement by rotation of the crankshaft 8, Compression fluid is inhaled from the suction pipe 9, and it is compressed by the compression space 16 and 17, After reaching a predetermined pressure (discharge pressure), the discharge passages 6g and 6i, 6 h of vent holes, After being breathed out by the discharge space 1a of the upper part of said well-closed container 1 from the vent hole 4c and the discharge passage 2c, The aisle resistance part 60 formed in the passage (not shown) formed between the well-closed container 1, the 1st frame two, and the 2nd frame three, the passage (not shown) formed between the well-closed container 1 and the electric motor stator 7a, and the auxiliary frame 11 is passed, and it is breathed out out of the well-closed container 1 through said discharge tube 10. 61 has adhered to the well-closed container 1 by the hermetic terminal for supplying electric power to said electric motor stator 7a.

[0055]Below, the lubrication structure of this example is explained.

[0056]The oil supply passage 23 which is open for free passage to said 1st feeding pipe 58 provided in the right end section of this crankshaft 8 is formed in the central part of said crankshaft 8.

It has extended to the 1st supporting spindle 8c that is a left edge part of the crankshaft 8.

The bearing feed hole formed in radial direction outward so that it might be open for free passage to each bearing is installed in said oil supply passage 23. That is, the 1st frame bearing feed hole 27 is installed in the fixed pivot receipt oil gallery 26 and the 1st frame bearing 2a by the 2nd frame bearing feed hole 25 and the turning bearing 6b at the 2nd frame bearing 3a, respectively. In the oil supply passage 23, sufficient passage area is secured so that pressure drawdown may not occur.

[0057]The fuel level in the lubricous sump 22 formed in said auxiliary frame 11 and the side edge part of said well-closed container 1, When the compressor is operated, when compression fluid passes the aisle resistance part 60 formed in the auxiliary frame 11, pressure loss arises, a fuel level is pushed up by an around 60 aisle resistance parts pressure differential, and the fuel level at the time of operation is secured. When the compressor has stopped, since an around 60 aisle resistance parts pressure differential does not occur, a fuel level falls.

[0058]The oil of the lubricous sump 22 inhaled via the 2nd feeding pipe 59 by centrifugal pump operation of the 1st feeding pipe 58 by constituting as mentioned above in the oil supply passage 23, Lubricous oil supply is carried out [in the 2nd frame bearing 3a / at the turning bearing 6b] through the 1st more frame bearing feed hole 27 to the 1st frame bearing 2a through the fixed pivot receipt oil gallery 26 through the 2nd frame bearing feed hole 25, respectively. Here the 2nd frame bearing 3a among the oils which carried out lubrication a part, . Pass through a bearing crevice electric motor storing chamber 28 toward the right direction, and other oils flow through a bearing crevice into said electric motor storing chamber 28 via the oil

return hole 29 formed [three] in the 2nd fixed scroll 5 and the 2nd frame toward the left. A part flows through a bearing crevice toward the right direction among the oils which carried out the lubrication of the turning bearing 6b, and other oils are discharged [at said electric motor storing chamber 28] toward a left to said 6 g of discharge passages again via said oil return hole 29, respectively in a bearing crevice. In a part, 6g of discharge passages pass through a bearing crevice toward the right direction among the oils which carried out the lubrication of the 1st frame bearing 2a, and other oils are discharged by the discharge space 1a toward a left, respectively in a bearing crevice. The natural fall of the oil discharged by said discharge space 1a, respectively is carried out to the lower part of the well-closed container 1, and it returns to the lubricous sump 22 via the oil return path 30 established in the peripheral part of the 1st frame and the 2nd frame with said oil which carried out oil tempering and was scavenged via the hole 29 to the electric motor storing chamber 28.

[0059]Below, drawing 16 shows the entire structure of the scroll compressor in which other examples of this invention are shown. Here, since the same number was appended to the same part as compared with the example shown in drawing 15, explanation of the structure of the portion is omitted.

[0060]The feature of this example is having installed the compulsive pump means 62 in the 2nd supporting spindle 8e right end section of the crankshaft 8 as lubrication structure as compared with drawing 12. Here, it is a trochoid pump etc. as mentioned above as the compulsive pump means 62. Since it is the same as that of the example shown in drawing 15 except a feed means, the explanation about structure and its operation is omitted.

[0061]

[Effect of the Invention]In this invention, even when a lubricous sump is in a high-pressure or low-pressure atmosphere, The 2nd oil supply passage formed by carrying out eccentricity so that it might be open for free passage to the oil supply passage which is open for free passage to this lubricous sump is provided, By the composition and ****** which install the spiral slot which is open for free passage to the bearing feed hole formed in said lubricous sump side edge part of the composition which installs a radial-direction-outward bearing feed hole so that it may be open for free passage to this 2nd oil supply passage, or said oil supply passage at a compulsive pump means or said radial direction outward. The lubrication to each part of a bearing or a sliding part can be performed certainly.

Therefore, the reliability of a compressor improves.

[0062]When a lubricous sump is in a low-pressure atmosphere, Since the lubrication to each part of a bearing or a sliding part can be further performed certainly by constituting so that oil tempering of the sealing machine style may be provided and carried out between said turning scroll and said fixed scroll and a passage may be opened for free passage to said lubricous sump, it is effective in the reliability of a compressor improving further.

[Translation done.]

* NOTICES *

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]It is a figure showing the entire structure of the scroll compressor of the example of this invention.
[Drawing 2]It is a perspective view of the Oldham splice of the example of this invention.
[Drawing 3]It is a turning scroll sectional view of the example of this invention.
[Drawing 4]It is a sectional view of the 2nd fixed scroll of this invention.
[Drawing 5]It is a sectional view of the 1st fixed scroll of the example of this invention.
[Drawing 6]It is a figure showing the entire structure of the scroll compressor of other examples of this invention.
[Drawing 7]It is a figure showing the entire structure of the scroll compressor of other examples of this invention.
[Drawing 8]It is a figure showing the entire structure of the scroll compressor of other examples of this invention.
[Drawing 9]It is a figure showing the entire structure of the scroll compressor of other examples of this invention.
[Drawing 10]It is a figure showing the entire structure of the scroll compressor of other examples of this invention.
[Drawing 11]It is a figure showing the entire structure of the scroll compressor of other examples of this invention.
[Drawing 12]It is a figure showing the entire structure of the scroll compressor of other examples of this invention.
[Drawing 13]It is a figure showing the entire structure of the scroll compressor of other examples of this invention.
[Drawing 14]It is a figure showing the entire structure of the scroll compressor of other examples of this invention.
[Drawing 15]It is a figure showing the entire structure of the scroll compressor of other examples of this invention.
[Drawing 16]It is a figure showing the entire structure of the scroll compressor of other examples of this invention.
[Description of Notations]

1 -- A well-closed container, 2 -- Frame [1st] three -- the 2nd frame, 4 -- The 1st fixed scroll, 5 [-- Suction pipe,] -- The 2nd fixed scroll, 6 -- A turning scroll, 8 -- A crankshaft, 9 10 [-- Operating chamber,] -- A discharge tube, 15 -- The Oldham splice, 16, 17 -- Compression space, 18, 19 22 [-- The 2nd frame bearing feed hole,] -- A lubricous sump, 23 -- The 1st oil supply passage, 24 -- The 1st oil supply passage, 25 26 -- A fixed pivot receipt oil gallery, 27 -- The 1st frame bearing feed hole, 28 -- Electric motor storing chamber, 29 [-- Inner rotor,] -- Oil tempering is carried out and it is a hole and 30. -- Oil tempering is carried out and it is a passage and 31. -- Pumping axes, 32 33 -- An outer rotor, 34 -- A casing, 35 -- Top side plate, 36 [-- Spiral slot,] -- A bottom side plate, 37 -- An admission port, 38 -- A delivery, 3940, 41 42 [-- Admission port,] -- A restriction passage, 43, 44 -- A seal means, 45 -- Suction holes 46 and 47 48 [-- A section wall, 52 / -- Discharge space,] -- An oil path, 49 -- A feed hole, 50 -- An O ring, 51 53 [-- A communicating path, 57 / -- Guide bearing housing, 58 / -- The 1st feeding pipe, 59 / -- The 2nd feeding pipe, 60 / -- An aisle resistance part, 61 / -- A hermetic terminal, 62 / -- Compulsive pump means] -- Section wall rooms 53 and 54 -- A communicating path, 55 -- An oil sump room, 56

[Translation done.]

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CLAIMS

[Claim(s)]
[Claim 1]A turning scroll which formed a spiral lap in one monotonous both sides, and a fixed scroll oppose a lap mutually, In a scroll compressor which carries out eccentricity, combines, makes it circle, without a driving shaft established by penetrating said turning scroll and a fixed scroll rotating said turning scroll to a fixed scroll, and compresses a gas, The 1st oil supply passage that a lubricous sump is in a high-pressure atmosphere, and opens for free passage to this lubricous sump, A scroll compressor comprising a bearing feed hole which was open for free passage to this 1st oil supply passage, was open for free passage to the 2nd oil supply passage formed by carrying out eccentricity to an axial center of said 1st oil supply passage, and this 2nd oil supply passage, and was formed in radial direction outward.
[Claim 2]A turning scroll which formed a spiral lap in one monotonous both sides, and a fixed scroll oppose a lap mutually, In a scroll compressor which carries out eccentricity, combines, makes it circle, without a driving shaft established by penetrating said turning scroll and a fixed scroll rotating said turning scroll to a fixed scroll, and compresses a gas, A scroll compressor which installing a compulsive pump means in a bearing feed hole where a lubricous sump is in a high-pressure atmosphere, was open for free passage to an oil supply passage which is open for free passage to this lubricous sump, and this oil supply passage, and was formed in radial direction outward, and said lubricous sump side edge part of said oil supply passage, and constituting.
[Claim 3]A turning scroll which formed a spiral lap in one monotonous both sides, and a frame which oppose a lap mutually, carries out eccentricity of the fixed scroll, combines, and holds a fixed scroll so that sliding of driving shaft shaft orientations is possible, An operating chamber formed with a frame, a fixed scroll, and a seal ring, A communicating hole which opens for free passage compression space formed on a lap of an operating chamber, a turning scroll, and a fixed scroll is provided, In a scroll compressor which makes it circle, without a driving shaft established by penetrating said turning scroll and a fixed scroll rotating said turning scroll to a fixed scroll, and compresses a gas, A scroll compressor comprising a spiral slot where a lubricous sump was opened for free passage and formed in a bearing feed hole which is in a high-pressure atmosphere, was open for free passage to an oil supply passage which is open for free passage to this lubricous sump, and this oil supply passage, and was formed in radial direction outward, and this bearing feed hole.
[Claim 4]A turning scroll which formed a spiral lap in one monotonous both sides, and a fixed scroll oppose a lap mutually, In a scroll compressor which carries out eccentricity, combines, makes it circle, without a

driving shaft established by penetrating said turning scroll and a fixed scroll rotating said turning scroll to a fixed scroll, and compresses a gas, The 1st oil supply passage that a lubricous sump is in a low-pressure atmosphere, and opens for free passage to this lubricous sump, A scroll compressor comprising a bearing feed hole which was open for free passage to this 1st oil supply passage, was open for free passage to the 2nd oil supply passage formed by carrying out eccentricity to an axial center of said 1st oil supply passage, and this 2nd oil supply passage, and was formed in radial direction outward.

[Claim 5]A turning scroll which formed a spiral lap in one monotonous both sides, and a fixed scroll oppose a lap mutually, In a scroll compressor which carries out eccentricity, combines, makes it circle, without a driving shaft established by penetrating said turning scroll and a fixed scroll rotating said turning scroll to a fixed scroll, and compresses a gas, A scroll compressor which installing a compulsive pump means in a bearing feed hole where a lubricous sump is in a low-pressure atmosphere, was open for free passage to an oil supply passage which is open for free passage to this lubricous sump, and this oil supply passage, and was formed in radial direction outward, and said lubricous sump side edge part of said oil supply passage, and constituting.

[Claim 6]A turning scroll which formed a spiral lap in one monotonous both sides, and a fixed scroll oppose a lap mutually, In a scroll compressor which carries out eccentricity, combines, makes it circle, without a driving shaft established by penetrating said turning scroll and a fixed scroll rotating said turning scroll according to a rotation preventing mechanism to a fixed scroll, and compresses a gas, A scroll compressor comprising an oil supply hole which a lubricous sump is in a low-pressure atmosphere, is open for free passage to an oil supply passage which is open for free passage to this lubricous sump, and this oil supply passage, and opens for free passage a bearing feed hole formed in radial direction outward, this bearing feed hole, and said rotation preventing mechanism part.

[Claim 7]The scroll compressor according to any one of claims 4 to 6 constituting so that oil tempering of the sealing machine style may be provided and carried out between said turning scroll and said fixed scroll and a passage may be opened for free passage to said lubricous sump.

[Claim 8]The scroll compressor according to claim 7 constituting so that a gas compressed by between both laps of said turning scroll and said fixed scroll may be direct breathed out by the exterior of this compressor.

[Claim 9]The scroll compressor according to claim 7 characterized by forming an opposite side edge part in low-pressure atmosphere of a section wall with said lubricous sump part of said driving shaft.

[Translation done.]

* NOTICES *

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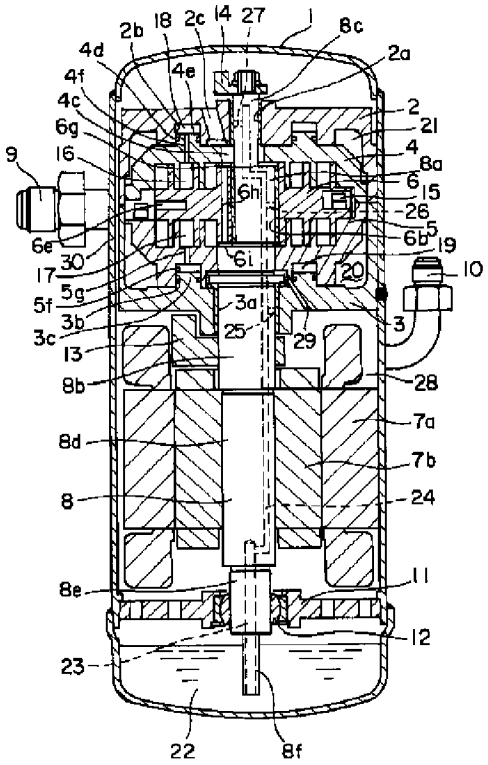
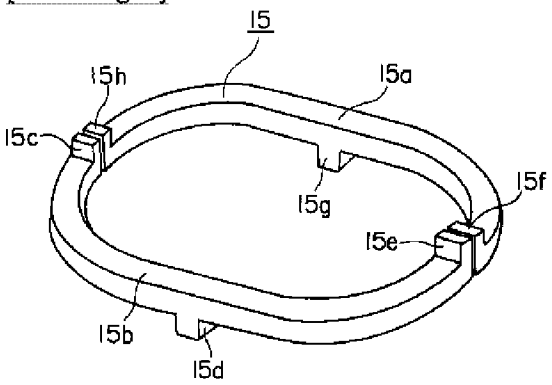
DRAWINGS

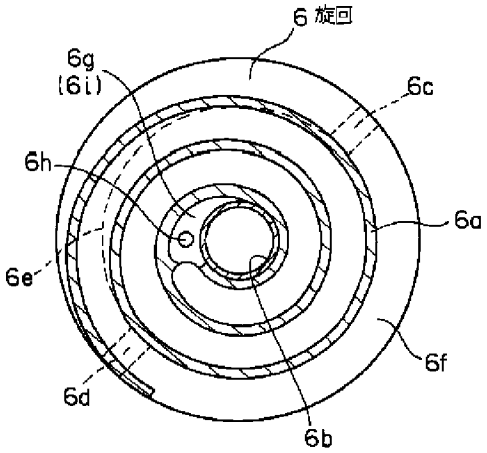
[Drawing 1]



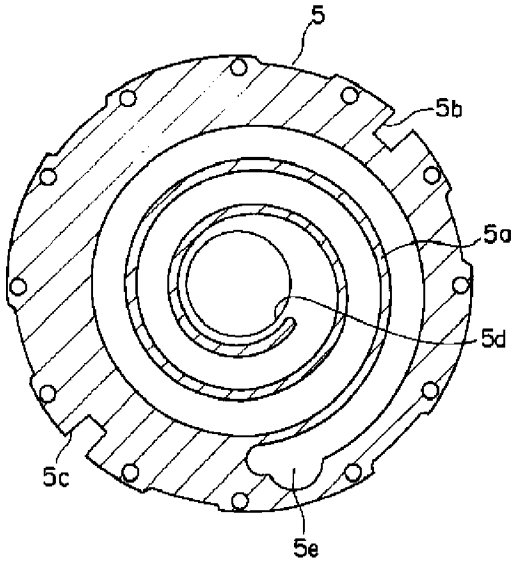
[Drawing 2]



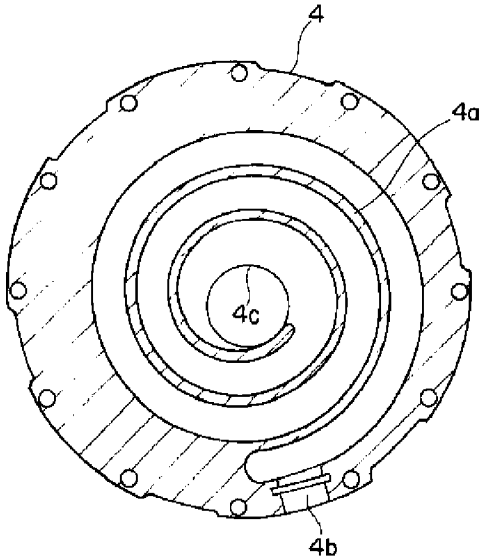
[Drawing 3]



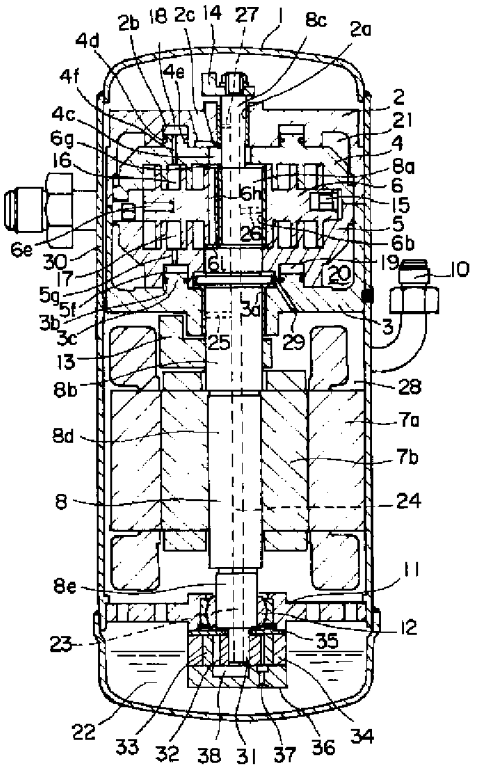
[Drawing 4]



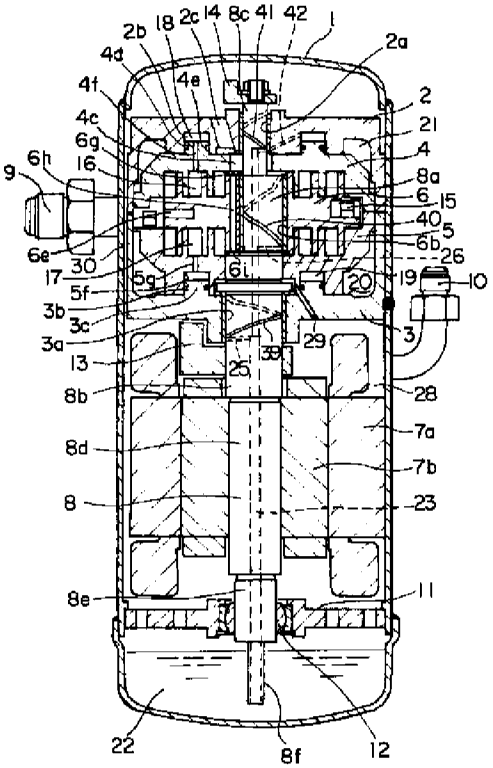
[Drawing 5]



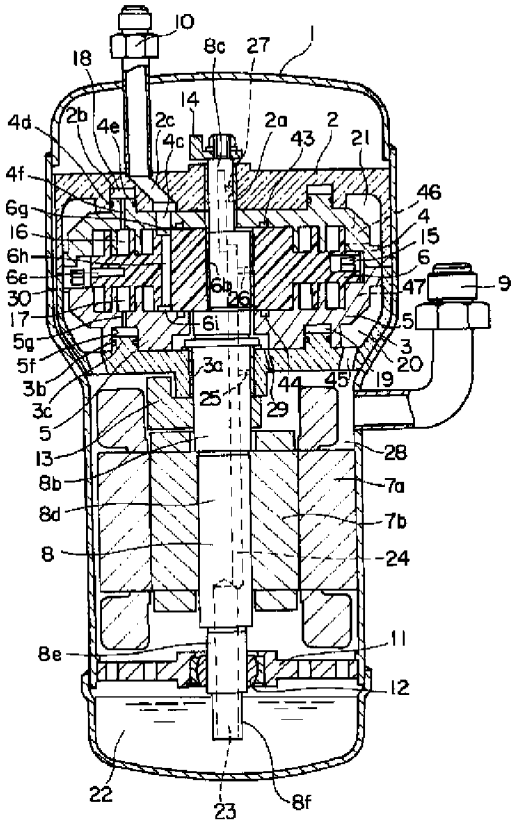
[Drawing 6]



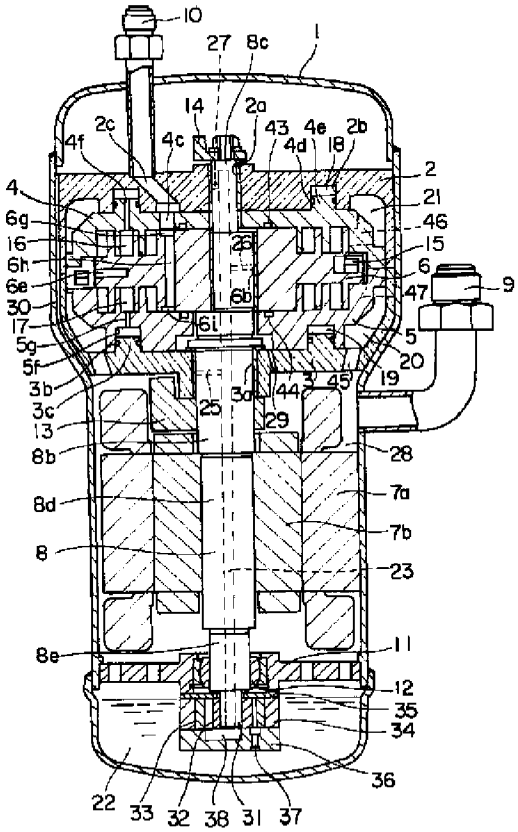
[Drawing 7]



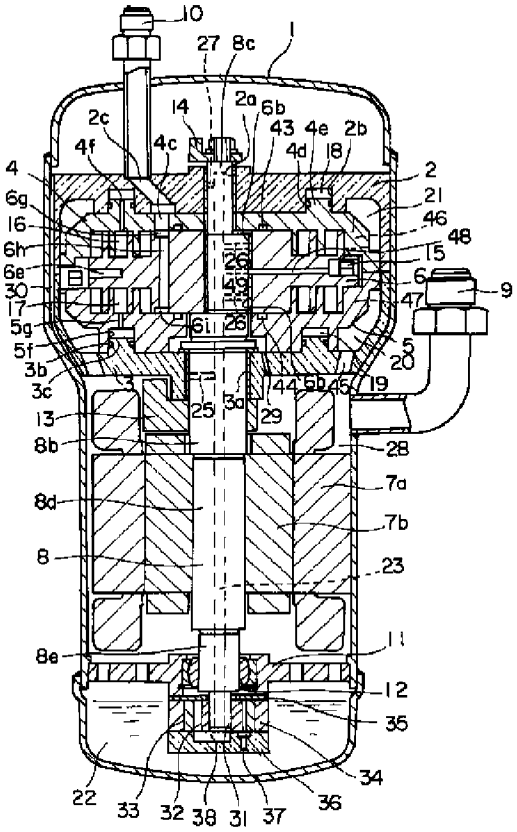
[Drawing 8]



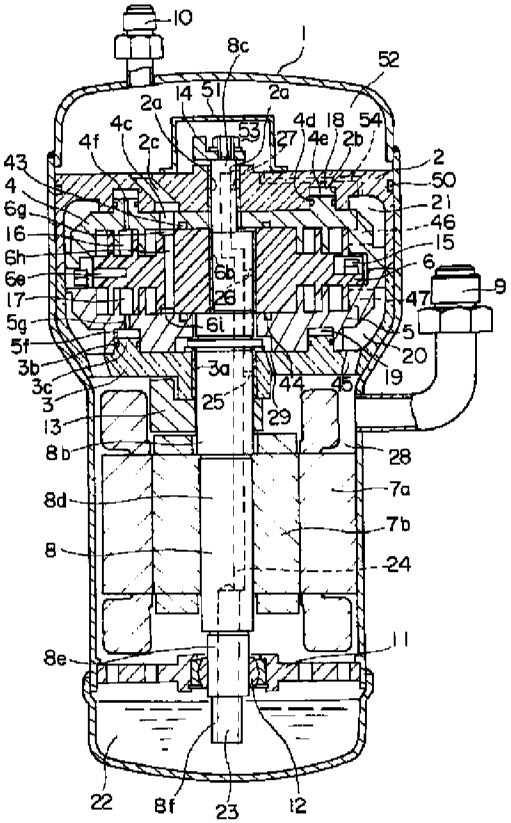
[Drawing 9]



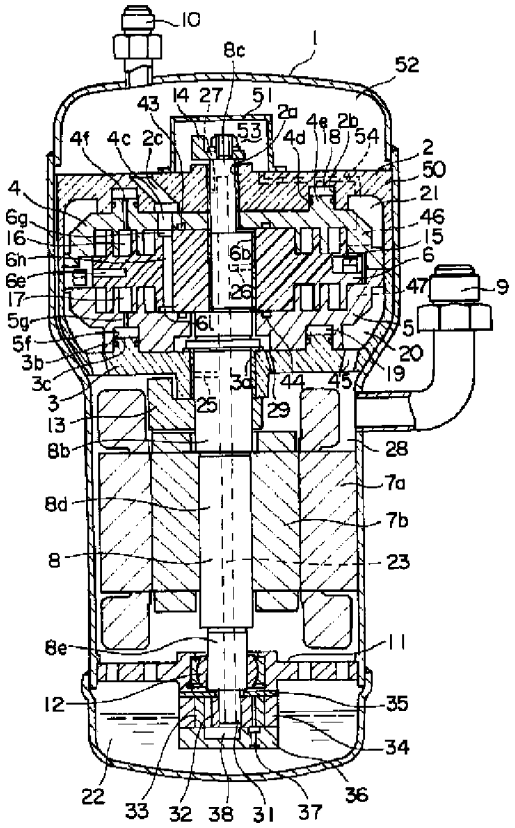
[Drawing 10]



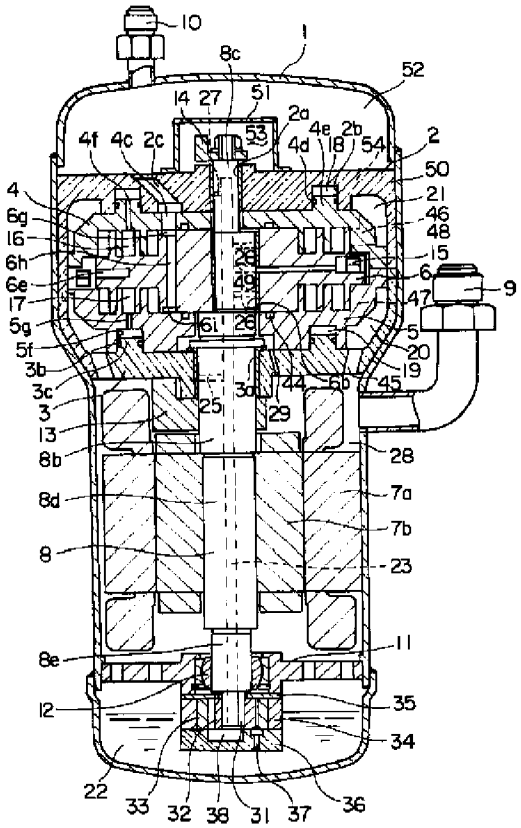
[Drawing 11]



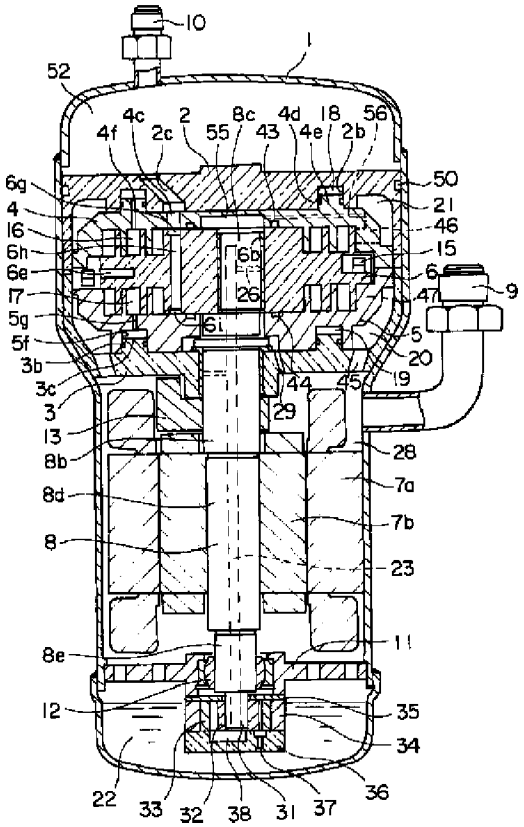
[Drawing 12]



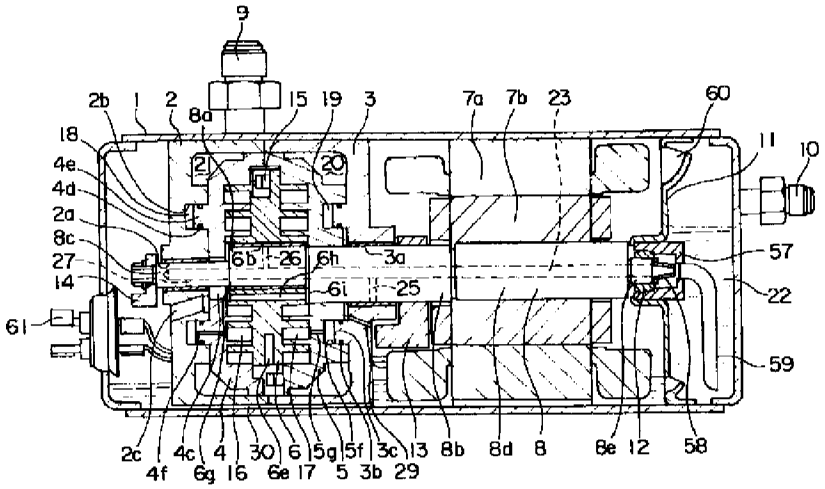
[Drawing 13]



[Drawing 14]



[Drawing 15]



[Drawing 16]